

WE CLAIM:

1. A fluid treatment method comprising:
receiving fluid into a treatment area;
introducing ultraviolet light into said treatment area from at least one ultraviolet laser as the fluid passes through said treatment area, wherein DNA for potentially harmful microorganisms that might be contained within the fluid are reactive to the ultraviolet light and are rendered ineffective.
2. The method of claim 1 wherein said treatment area is located within an air distribution system associated with a fluid-controlled environment.
3. The method of claim 1 wherein said treatment area is located within a water distribution system.
4. The method of claim 1 wherein said treatment area is a treatment area wherein fluid and ultraviolet light converge.
5. A fluid treatment system, comprising:
a treatment area further comprising an entry point for receiving fluid from input tubing connected to the input portion of said treatment area and an exit point for providing fluid passing through said treatment area to a point of use; and
at least one ultraviolet laser coupled to said treatment area for delivery of ultraviolet light into said treatment area;
wherein microorganisms are sensitive to ultraviolet light and are rendered ineffective as the ultraviolet light penetrates and treats fluid flowing through said treatment area.
6. The method of claim 5 wherein said treatment area is located with and coupled to distribution tubing associated with at least one of a water fountain, a kitchen

sink, industrial rinsing equipment, air ducts, dialysis systems, laboratory air recirculation systems, and airplane air recirculation systems.

7. A fluid-borne hazard detection and fluid treatment system, comprising:
at least one detector deployed at nodes along a fluid distribution system for detection biological microorganisms and/or chemicals;
communications system deployed with said detectors at the nodes for reporting detection of the biological microorganisms or the chemical to remote monitoring systems and for receiving treatment commands from said remote monitoring systems; and
treatment areas deployed at said nodes for providing ultraviolet light into fluid containing said biological microorganisms.

8. The invention of claim 7, further comprising flow sensors deployed at said nodes, wherein said sensors turn on the ultraviolet laser light sources whenever flow through nodes is sensed.

9. The invention of claim 7, further comprising filters deployed at at least one of input or output points relative to said nodes.

10. The invention of claim 7, further comprising at least one shut-off valve deployed at said nodes, said at least one shut-off valve responsive to at least one of said detectors or said remote monitoring systems by blocking fluid flow through said nodes.

11. The invention of claim 7, said treatment area further comprising a junction box having an entry point for receiving fluid from input tubing connected to the input portion of the junction box and an exit point for to allow treated fluid to continue moving towards its point of use and at least one ultraviolet laser light source coupled to the junction box.;

12. The invention of claim 11 wherein said ultraviolet laser light source can be provided in the form of at least one of: a fiber optic line coupled to a laser and also

coupled to the junction box, or as at least one laser directly coupled to the junction box, at least one point about the junction box.

13. The invention of claim 11 wherein the junction box further comprises a stainless steel, fluidtight housing wherein internal surfaces of the housing are highly polished to allow for reflection of light.

14. The invention of claim 13 wherein said junction box further comprises at least one of reflectors, deflectors and diffusers within said housing to scatter light provided by said ultraviolet laser light source.

15. The invention of claim 11 further including at least one of baffles, walls or spiraled tubing that are formed within the housing to create flow channels throughout the housing, wherein said at least one of baffles, walls or spiraled tubing slow down fluid flow within said treatment area thereby providing more opportunities for ultraviolet light exposure of fluid and its treatment.

16. The invention of claim 11 wherein said treatment area includes a housing and at least one of baffles or spiraled tubing that create exposure time through flow of fluid through said at least one of baffles or spiraled tubing within the housing.

17. The invention of claim 11 wherein said treatment area includes a housing and more than one internal wall creating chambers and further forming serpentine flow channels create exposure time through flow of fluid through said chambers formed within the housing, said invention further comprising at least one ultraviolet laser light source assigned to each chamber, wherein each of said ultraviolet laser light source can be tuned to a unique wavelength.

18. The invention of claim 11 wherein the communications system is adapted for reporting detection of the biological microorganisms or the chemical by said at least

one detector to at least one remote monitoring system and for receiving treatment commands from said at least one remote monitoring system.

19. The invention of claim 11, the treatment area comprising a housing having an entry point for receiving fluid into said treatment area and an exit point for to allow treated fluid to continue moving towards its point of use and at least one ultraviolet semiconductor laser light source coupled to the housing, said treatment area for providing ultraviolet light into fluid containing biological microorganisms.

20. The invention of claim 13, further comprising at least one shut-off valve responsive to said detector or said at least one remote monitoring system by preventing fluid flow.

21. The invention of claim 11 wherein said housing is fluidtight and comprised of stainless steel internal surfaces that are highly polished.

22. The invention of claim 11, further comprising a variable wavelength controller, wherein said at least one ultraviolet laser light source can be adjusted by said variable wavelength controller in response to detection by said detector, thereby enabling for precise targeting of detected microorganisms.

23. The invention of claim 19, further comprising a variable wavelength controller can be provided to adjust the wavelength of light produced by the ultraviolet laser light source in response to detection by said at least one detector.

24. The invention of claim 19, further comprising a flow sensor wherein said flow sensor can cause said at least one ultraviolet laser light source to be turned on whenever fluid flow through said treatment area is sensed.

25. The invention of claim 19, further comprising at least one filter deployed near at least one of said entry or exit points.